611TH AIR SUPPORT GROUP
611TH CIVIL ENGINEER
SQUADRON
ELMENDORF AFB, ALASKA

KING SALMON AIR STATION
KING SALMON, ALASKA
INSTALLATION RESTORATION PROGRAM

Decision Document for Remediated Contaminated Soils at the Soil Remediation Area

ORIGINAL

NOVEMBER 2000

DECISION DOCUMENT FOR REMEDIATED CONTAMINATED SOILS AT THE SOIL REMEDIATION AREA KING SALMON AIR STATION KING SALMON, ALASKA

DECLARATION AND DECISION SUMMARY

Prepared for:

United States Air Force
611th Civil Engineer Squadron
10471 20th Street, Suite 338
Elmendorf AFB AK 99506-2270

Prepared by:

Paug-Vik Development Corporation
P.O. BOX 429
Naknek, Alaska 99633

OASIS Environmental, Inc.
807 G Street, Suite 250
Anchorage, Alaska 99501

DECLARATION

SITE NAME AND LOCATION

This Decision Document (DD) addresses remediated contaminated soils at King Salmon Air Station (KSA) in King Salmon, Alaska. This location does not have an Installation Restoration Program (IRP) site designation as it is the repository for soil from several KSA IRP sites.

STATEMENT OF BASIS

This decision is based on information contained in the Administrative Record, including but not limited to the results of a petroleum contaminated soil stockpile assessment (1997), biocell performance sampling and monitoring (1997 through 1999), biocell and long-term stockpile closure sampling (1999), and evaluation of contaminated soil leachate generation through SESOIL and AT123D modeling

This DD presents the selected alternative for remediated contaminated soils at KSA. This document has been developed in accordance with the Defense Environmental Restoration Program, 10 *United States Code* (USC) 2701, consistent with ADEC Oil and Hazardous Substances Pollution Control Regulations [18 Alaska Administrative Code (AAC) 75], the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9601 and Executive Order 12580 (52 *Federal Register* 2923), and to the extent practicable with the National Oil and Hazardous Substances Pollution Contingency Plan [40 *Code of Federal Regulations* (CFR) 300].

ASSESSMENT OF SITE

Historic IRP remedial investigations and interim removal actions at KSA have resulted in the generation of soil contaminated with petroleum, oil, and lubricants (POL) and other chemicals. This soil was placed in long-term stockpiles or bioremediation cells (biocells) at the KSA Soil Remediation Area for storage and treatment. Contaminated soil from ongoing and future activities at KSA will also be placed in the Soil Remediation Area. Only the soils originating from the Soil Remediation Area are addressed in this Decision Document.

The Soil Remediation Area was originally constructed in 1994. Contaminated soils from various locations at KSA, including underground storage tanks (USTs), fuel seeps, sewer lines, and dry wells, were consolidated into seven long-term soil stockpiles and seven bioremediation treatment cells (biocells). An eighth long-term stockpile was prepared to receive soil, but was never used. Each cell is approximately 50 by 150 feet and can accommodate 1,200 cubic yards of contaminated soil.

Soil analytical results indicated that historic remediated POL-contaminated soils from the Soil Remediation Area met the site remedial action objectives (RAOs) of 2,500 mg/kg DRO, 1,400 mg/kg GRO, and 10,000 mg/kg RRO. The soils no longer presented a threat to public health, welfare, or the environment, and were reused as capping and fill material at Landfill #2 (LF06) and the RAPCON site. Clean, native soil excavated from the Soil Remediation Area during its construction was used as final capping material at the RAPCON site.

DESCRIPTION OF THE SELECTED REMEDY

Based on soil analytical data, modeling, and additional studies, the U.S. Air Force (USAF) and Alaska Department of Environmental Conservation (ADEC) have selected a plan of soil reuse at Landfill No. 2 (LF06) and the RAPCON site and institutional controls

(land-use restrictions), with no further remedial action planned, as the final action for historic remediated POL-contaminated soils at KSA. This selected remedy is deemed sufficient to protect human health and the environment, and includes the following components:

- Treated soil was reused as excavation backfill and landfill capping material at Landfill No. 2 (LF06) and the RAPCON site. Additional treated soils from the Soil Remediation Area have been selected for reuse as capping material at Landfill No. 2 (LF06);
- A minimum of one foot of cover (clean soil) was placed over the remediated soils at the RAPCON site and vegetation will be established in disturbed areas. Upon completion of capping activities at Landfill No. 2 (LF06), a layer of clean cover will be placed over the remediated soils and vegetation will be established in disturbed areas; and
- Future installation of drinking water wells and soil excavation will be restricted at the soil reuse areas under an addendum to the *General Plan, 611th Air Support Group (ASG), Remote Alaska* (hereafter referred to as the General Plan) and appropriate land records.

Contaminated soils generated during ongoing and future activities at KSA will be stored and treated at the Soil Remediation Area. These soils must meet ADEC 18 AAC 75 cleanup levels before being reused elsewhere at KSA as excavation backfill or landfill capping material. As determined by ADEC on a site-by-site basis, certain land-use restrictions and monitoring requirements may apply to the soil reuse sites.

STATUTORY DETERMINATIONS

No remedial action except institutional controls involving land-use restrictions is necessary to ensure the protection of human health or the environment from remediated contaminated soils at KSA.

This decision may be reviewed and modified in the future if new information becomes available which indicates the presence of previously undiscovered contamination or exposure routes that may cause a risk to human health or the environment.

This signature sheet documents USAF and ADEC acceptance of the Decision Document for Remediated Contaminated Soils at the Soil Remediation Area, KSA, King Salmon, Alaska. This Decision Document satisfies requirements of the National Environmental Policy Act that apply to CERCLA response actions.

Michael Wyka, Colonel, USAF
Commander, 611th Air Support Group
United States Air Force

29 Dec 00
Date

Jennifer Roberts
Contaminated Sites Section Manager
Alaska Department of Environmental Conservation

Nov 9 2000
Date

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

ABBREVIATIONS AND ACRONYMS

611 CES	611th Civil Engineer Squadron
AAC	Alaska Administrative Code
AAC	Alaska Air Command
ACLs	Alternative Cleanup Levels
ADEC	Alaska Department of Environmental Conservation
AFB	Air Force Base
ARARs	Applicable or Relevant and Appropriate Requirements
bgs	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CFR	Code of Federal Regulations
COPCs	Contaminants of Potential Concern
CRP	Community Relations Plan
DRO	Diesel-Range Organics
EMCON	EMCON Alaska, Inc.
FAA	Federal Aviation Administration
FS	Feasibility Study
GRO	Gasoline-Range Organics
IRP	Installation Restoration Program
KSA	King Salmon Air Station
NORAD	Northern American Aerospace Defense Command
OASIS	OASIS Environmental, Inc.
POL	Petroleum, Oil, and Lubricants
RAB	Restoration Advisory Board
RAO	Remedial Action Objective
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
SAIC	Science Applications International Corporation
USAF	United States Air Force
USC	United States Code
USEPA	U.S. Environmental Protection Agency
UST	Underground Storage Tank

UNITS OF MEASURE

F	Fahrenheit
mg/kg	Milligrams Analyte per Kilogram of Sample

1 INTRODUCTION

This Decision Document (DD) summary provides an overview of the determination for remediated contaminated soils stockpiled at the King Salmon Air Station (KSA), Alaska. This DD presents the history of these soils, the characteristics of KSA and the soil reuse areas Landfill No. 2 (LF06) and RAPCON, the associated risks to human health and the environment, and an evaluation of applicable or relevant and appropriate requirements (ARARs). It also describes the final selected action for the soil, which included reusing it as excavation backfill and landfill capping material and implementing institutional controls (land-use restrictions).

This document states how the determination satisfies requirements of the Defense Environmental Restoration Program, 10 *United States Code* (USC) 2701, consistent with ADEC Oil and Hazardous Substances Pollution Control Regulations [18 Alaska Administrative Code (AAC) 75], CERCLA, and to the extent practicable with the National Oil and Hazardous Substances Pollution Contingency Plan [40 *Code of Federal Regulations* (CFR) 300].

A fact sheet presenting the soil treatment processes at the Soil Remediation Area and planned reuse was distributed on May 27, 1999 (USAF, 1999). No comments were received. The selected action is documented in this DD.

2 SITE DESCRIPTION

2.1 SITE LOCATION AND DESCRIPTION

King Salmon is situated on the Alaska Peninsula adjacent to Bristol Bay and Katmai National Park and Preserve, approximately 280 miles southwest of Anchorage and 15 miles east of Kvichak Bay (Figure 1). King Salmon lies in the Nushagak-Bristol Bay Lowland, a broad piedmont characterized by morainal topography and abundant fresh-water lakes. The area is accessible only by air or water.

The name "King Salmon" is used in this DD to indicate the general area of the property and installation, including the commercial airport, current and former USAF property, and the community of King Salmon. KSA refers specifically to current and former USAF property.

Historic IRP remedial investigations and interim removal actions at KSA resulted in the generation of soil contaminated with petroleum, oil, and lubricants (POL) and other chemicals. This soil was placed in long-term stockpiles or bioremediation cells (biocells) at the KSA Soil Remediation Area for storage and treatment (Figure 2). Only the soils located at the KSA Soil Remediation Area are addressed in this DD.

The Soil Remediation Area was originally constructed in 1994. Since 1994, contaminated soils from various locations at KSA, including underground storage tanks (USTs), fuel seeps, sewer lines, and dry wells, were consolidated into seven long-term soil stockpiles and seven bioremediation treatment cells (biocells) at the Soil Remediation Area (Figures 3 through 5). An eighth long-term stockpile was prepared to receive soil, but was never used. Each cell is approximately 50 by 150 feet and can accommodate 1,200 cubic yards of contaminated soil. A summary of the soils stored at the KSA Soil Remediation Area is provided below.

- **Long-Term Stockpiles:** Early soil excavation activities at KSA occurred during the late 1980's and early 1990's. Science Applications International Corporation's (SAIC) *Contaminated/Treatment Plan for Stockpiled Soils* reported more than 12,000 cubic yards (cy) of POL-contaminated soil at KSA in 1993. Complete details regarding the origin of these excavated soils are not available. These soils were consolidated into seven soil stockpiles. An eighth stockpile was prepared to receive soil, but was never used. Characterization of these long-term soil stockpiles has occurred at various times and includes 611 CES sampling in September 1993, EMCON sampling in 1997, and EMCON closure sampling in 1998 (EMCON, 1995b; 1997c; and 1999a, b, and c).
- **Biocell No. 1 and Biocell No. 2 (Fire Training Area No. 1):** In 1996, these completed biocells were filled with 2,025 cy of soil excavated from Fire Training Area No. 1. The sampling activities concluded that these soils were contaminated with POLs (gasoline and diesel) and were suitable for bioremediation (EMCON, 1996).
- **Biocell No. 3, Biocell No. 4, and Biocell No. 5 (RAPCON):** In 1997, Biocell No. 3, Biocell No. 4, and Biocell No. 5 were filled with soils excavated from the radar approach control (RAPCON) site (Radian, 1997).
- **Biocell No. 6 (Long-Term Stockpile No. 3):** Biocell No. 6 was filled with soil originally located in Long-Term Stockpile No. 3. Analytical results of samples

collected from Long-Term Stockpile No. 3 in May 1997 indicated levels of contamination high enough to warrant moving the stockpiled soil into a bioremediation treatment cell.

- **Biocell No. 7 (Rapids Camp Excavation):** In the summer of 1998 Biocell No. 7 was filled with selected soils generated during excavation activities at Rapids Camp (Bristol/Nugget, 1998).

Four groundwater-monitoring wells were installed around the perimeter of the Soil Remediation Area during initial construction. No soil contamination was noted during well installation activities. To date, these monitoring wells have not been sampled. The Soil Remediation Area is completely fenced and the entrance gates remain locked at all times, unless workers are present in the area. Closure of the Soil Remediation Area will be addressed in a future decision document.

2.2 SITE CHARACTERISTICS

The characteristics of the site are briefly described in this section. The primary focus is on climate, site geology, and hydrogeology.

2.2.1 King Salmon Area

The King Salmon area is located northwest of the Aleutian Range, which forms the backbone of the Alaska Peninsula and extends to the southwest into the Aleutian Islands. The topography consists of a hummocky plain interrupted by drainages.

King Salmon is in a maritime-continental climate zone. Daily average summer temperatures range between 50 and 60 degrees Fahrenheit (F), with highs in the 80s; winter average lows range from 6 to 20 degrees F. Average annual precipitation is 19.6 inches, including 46 inches of snow. Skies are cloudy about 80 percent of the time, and the area is frequently foggy in the summer. Average wind speed is nine knots, with occasional winds up to 70 knots.

King Salmon lies in upland and wetland regions along the northern bank of the Naknek River. The KSA ground elevations range from 30 to 68 feet above mean sea level. Surface geology of the King Salmon area consists of several hundred feet of unconsolidated glacial deposits overlying bedrock. The deposits have been reworked by marine tidal, fluvial, and lacustrine processes.

King Salmon is on the north bank of the Naknek River, midway between Kvichak Bay and Naknek Lake, which is fed by a 3,600 square mile watershed. Much of the Naknek River is estuarine, and the tidal effect extends 20 miles upstream. Four major tributaries and many minor streams, in addition to the discharge of Naknek Lake, feed into the Naknek River. Sea and river ice forms between November and April, although tidal fluctuations prevent the formation of shore-fast ice. The central part of KSA is drained by Eskimo Creek and the northern edge by King Salmon Creek. Both of these creeks flow into the Naknek River.

Three aquifers have been encountered by drilling at KSA. The aquifers consist of horizontally bedded silty sands separated by clayey silt aquitard units. The uppermost aquifer is designated the "A-Aquifer." This overlies the A-Aquitard, which overlies alternating aquitard and aquifer units designated as "B-" and "C-" aquifers and aquitards.

The competence of the A-Aquitard has not been determined. The A-Aquifer is unconfined and extends to between 20 and 40 feet below the ground surface (bgs). The saturated surface of the A-Aquifer varies from the water level at river margins and muskeg to about 30 feet bgs. Groundwater flow generally follows the surface topography, with some local variability. Most of the local water supply wells are completed in the B-Aquifer. KSA draws its water from the C-Aquifer.

2.2.2 Soil Remediation Area

The Soil Remediation Area is located in an upland area of KSA with no major drainages near the site. Subsurface soils consist of silty to gravelly sands overlying the less permeable A-Aquitard materials. Based on borehole logs from wells in the area, depth to groundwater is approximately 14 feet. Groundwater flows in a westerly direction toward Eskimo Creek, which is approximately 2,000 feet away.

2.2.3 Soil Reuse Area Landfill No. 2 (LF06)

Landfill No. 2 (LF06) is located approximately 150 feet northeast of Red Fox Creek and 2,000 feet north of Runway 29 (Figure 2). The water table at the site is approximately 15 feet bgs. Groundwater flow in the A-aquifer is in a southerly direction. Based on the limited amount of information available concerning the types and quantities of the material disposed of at the landfill, it appears garbage, scrap metal, and small volumes of shop wastes were placed in this landfill.

2.2.4 Soil Reuse Area RAPCON Site

RAPCON is located approximately 2,000 feet north of Runway 29 and approximately 1300 feet east of Runway 18 (Figure 2). The southern edge of the RAPCON site runs adjacent to Red Fox Creek. Depth to groundwater at the site ranges from 7 to 10 feet bgs, with the shallower depth to groundwater being encountered on the edge nearest Red Fox Creek. Groundwater flow is in a southerly direction toward Red Fox Creek where it is intercepted and treated by an air sparging/soil vapor extraction system.